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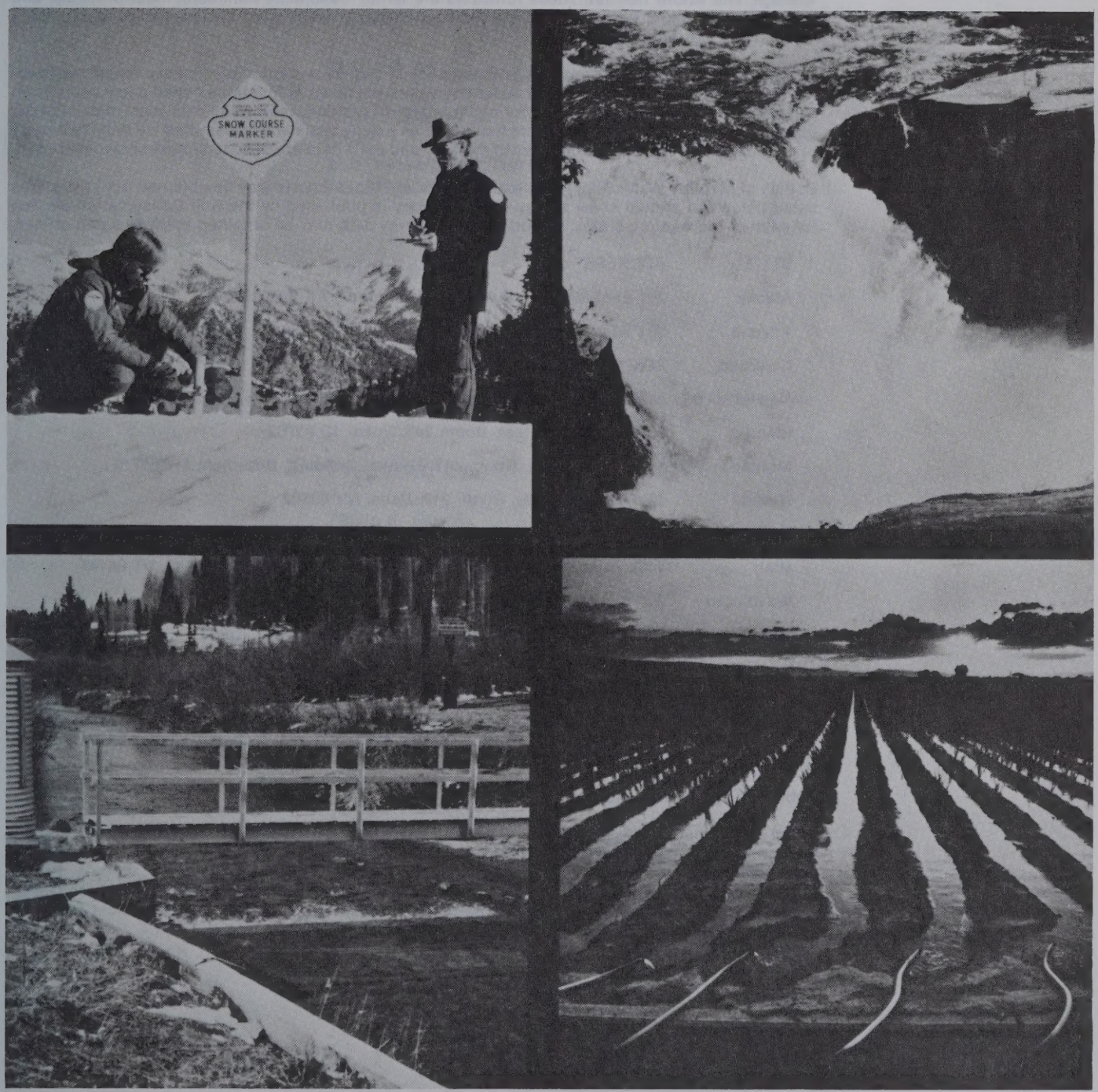
United States
Department of
Agriculture

**Soil
Conservation
Service**

**Bozeman,
Montana**

Montana Water Supply Outlook

April 1, 1988



Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are terms reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Denver, CO 80211
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 87102-3157
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201-1080
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resouces, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

Montana
Water Supply Outlook

and

Federal – State – Private
Cooperative Snow Surveys

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Programs and assistance of the United States Department of Agriculture are available without regard to race, creed, color, sex, age, or national origin.

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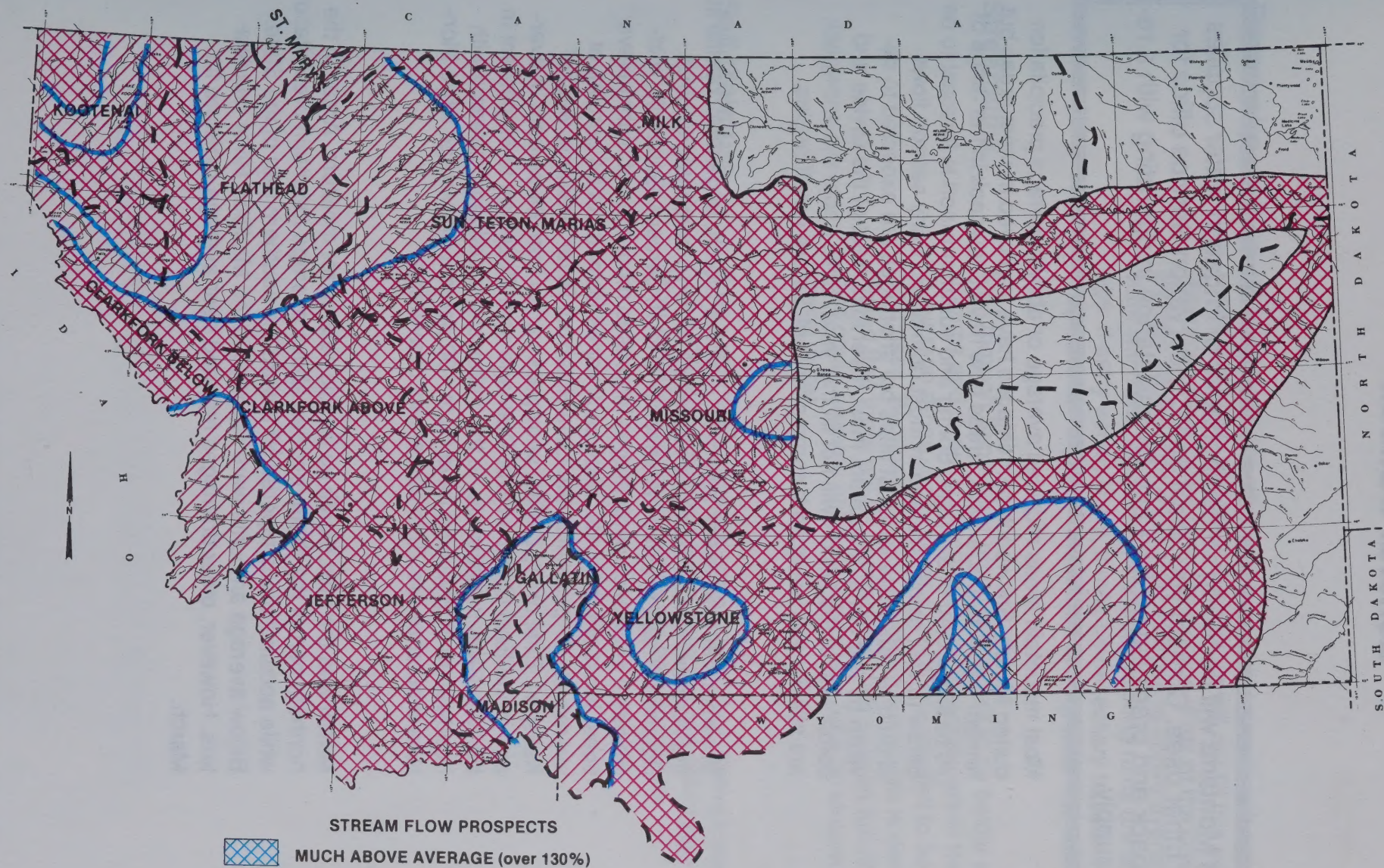
U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE



STREAMFLOW PROSPECTS FOR MONTANA

Spring and Summer Period

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296

USDA SCS FORT WORTH, TEXAS 1985

General Outlook

Most areas in Montana will be facing some shortages of irrigation water supplies and water for other uses. Contact your local Soil Conservation Service office for current snowpack and precipitation data and for assistance in operating with a reduced water supply.

Summary

Most mountain areas received average or above average precipitation during March. Snowpack percentages have improved in most areas but remain below average. Most areas now have snowpack in the range of 70 to 80 percent of average. Spring and summer runoff is forecast to be below to well below average in most drainages. Early season flows should be adequate for most uses but shortages are expected to develop by mid-June. It appears most reservoirs west of the Divide and some east of the Divide will not fill this year. Soils under the snowpack are still dry and will absorb some snowmelt before runoff begins.

Snowpack

Snowpack in most areas improved over the month. In general, basins in the northern part of the State improved 10 to 15 percentage points. Southern areas showed increases of 5 to 10 percent. Generally, mid-elevation snowpack percentages increased more than at higher elevations. West of the Divide, snowpack varies from about 84 percent of average to 61 percent in the Little Bitterroot River Drainage west of Kalispell. East of the Divide, snowpack varies from 84 percent of average in the East Gallatin River Drainage near Bozeman to 69 percent in the Milk River headwaters. In the Yellowstone drainage, streams with headwaters in Wyoming have 80 to 100 percent of average while Montana tributaries are 70 to 80 percent of average.

Precipitation

March was the best month so far this season for moisture. Areas in the northern part of the State reported above average mountain precipitation while accumulations tapered off toward the southern part of the State. Below average amounts were reported in the Madison River headwaters. However, other drainages reported near average moisture for March.

Reservoirs

West of the Divide, major reservoirs are very low. It appears Hungry Horse Reservoir and Lake Koocanusa will not fill this year. Most irrigation reservoirs have below average storage. East of the Divide, reservoir storage varies from well below average to above average. Some reservoirs will have problems filling unless spring rains are well above average. If early spring is dry, it may be necessary to pass water through reservoirs for irrigation rather than storing water for late season use.

Streamflow

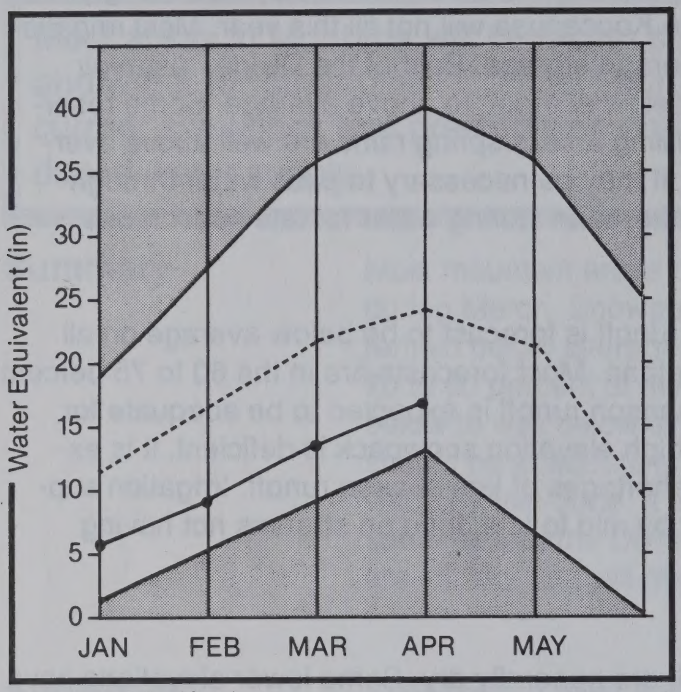
April through September runoff is forecast to be below average on all streams and rivers in Montana. Most forecasts are in the 60 to 75 percent of average range. Early season runoff is expected to be adequate for most uses. Because the high elevation snowpack is deficient, it is expected that there will be shortages of late season runoff. Irrigation supplies could become short by mid to late June on streams not having stored water.

Soil Moisture

Soils under the snowpack are generally dry. Some lower elevations have had a little snowmelt and these soils are absorbing part of the meltwater. Most foothills and valley areas are now snow free.

Kootenai Basin

Mountain snowpack* (inches)



*Kootenai in Montana

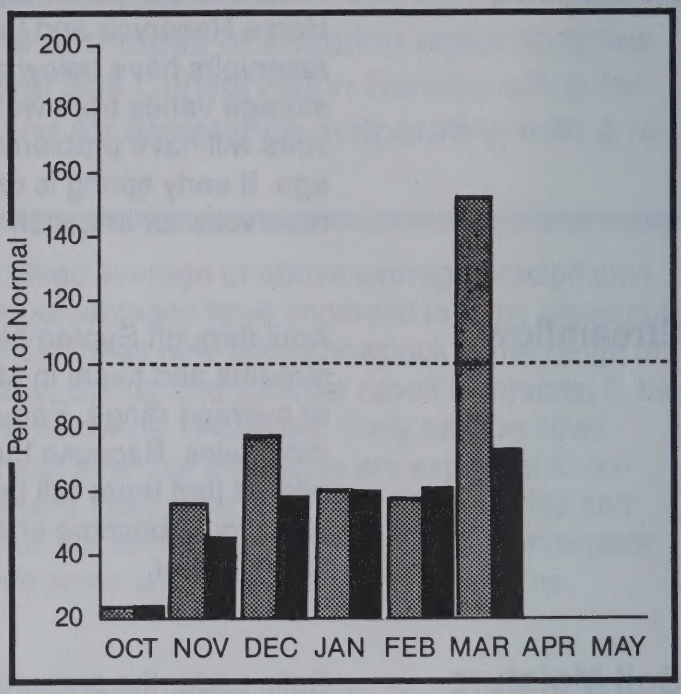
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was above average for March. This is the first month this year that above average.moisture has occurred. Snowpacks have improved but still remain below average. Streamflows are still forecast well below average this spring and summer. Unless considerable moisture falls this spring, it appears Lake Koocanusa will not fill this year.

For more information contact your local Soil Conservation Office

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
KOOTENAI RIVER blw Libby Dam 2	APR-JUL	5885.0	4180.0	71	5300.0	90	3060.0	52
	APR-SEP	6903.0	4900.0	71	6200.0	90	3600.0	52
FISHER RIVER near Libby	APR-JUL	240.0	150.0	63	210.0	88	90.0	38
	APR-SEP	256.0	162.0	63	220.0	86	100.0	39
YAAK RIVER near Troy	APR-JUL	494.0	320.0	65	440.0	89	200.0	40
	APR-SEP	517.0	350.0	68	475.0	92	225.0	44
KOOTENAI RIVER at Leonia 2	APR-JUL	7340.0	5210.0	71	6600.0	90	3800.0	52
	APR-SEP	8441.0	5990.0	71	7600.0	90	4400.0	52

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE KOOCANUSA	5748.0	1291.0	2248.0	1786.0

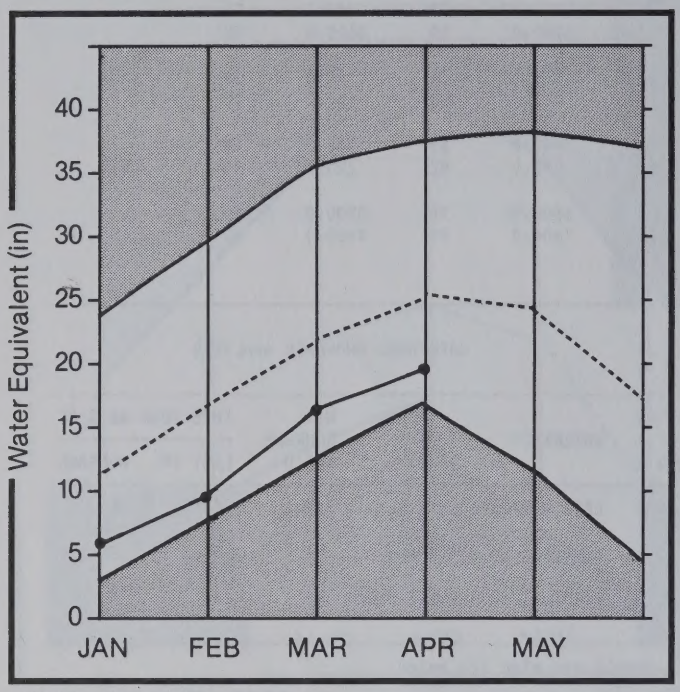
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
EAST KOOTENAI in B.C.	28	96	82
KOOTENAI in MONTANA	31	92	70
KOOTENAI ab BONNERS FERRY	58	94	74

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Flathead Basin

Mountain snowpack* (inches)



*Flathead

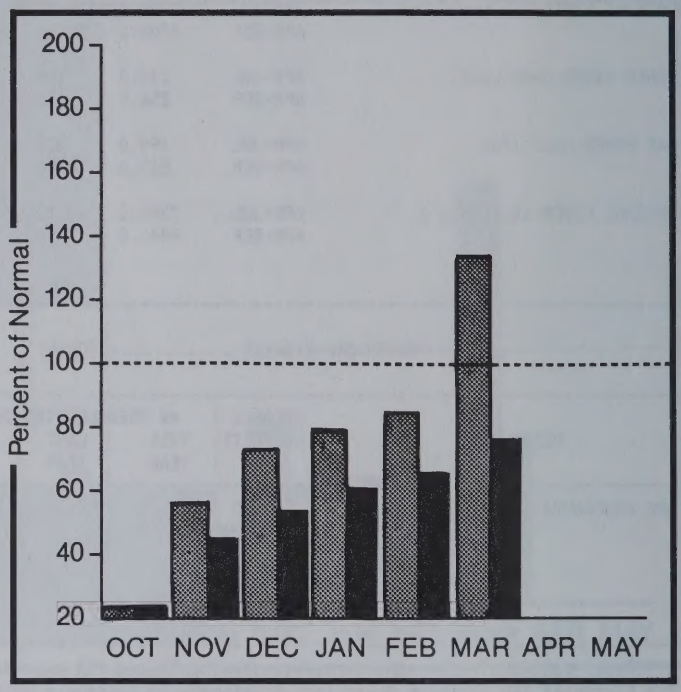
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Above average mountain precipitation fell during March. This is a significant improvement over the previous six months. The snowpack has shown some improvement but remains below average. Spring and summer streamflows are forecast to be below average. It appears that Hungry Horse Reservoir will not fill this year because of low inflows and low storage.

For more information contact your local Soil Conservation Office

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
NF FLATHEAD near Columbia Falls	APR-JUL	1701.0	1200.0	71	1440.0	85	960.0	56
	APR-SEP	1880.0	1330.0	71	1700.0	90	850.0	45
MF FLATHEAD near West Glacier	APR-JUL	1680.0	1260.0	75	1500.0	89	1030.0	61
	APR-SEP	1836.0	1400.0	76	1660.0	90	920.0	50
SF FLATHEAD near Columbia Falls 1	APR-JUL	2110.0	1600.0	76	2130.0	101	1070.0	51
	APR-SEP	2248.0	1730.0	77	2180.0	97	1280.0	57
FLATHEAD at Columbia Falls 1	APR-JUL	5621.0	4150.0	74	5280.0	94	3030.0	54
	APR-SEP	6114.0	4510.0	74	5800.0	95	3060.0	50
SWAN RIVER near Big Fork	APR-JUL	597.0	425.0	71	510.0	85	340.0	57
	APR-SEP	683.0	485.0	71	580.0	85	390.0	57
FLATHEAD RIVER near Polson 2	APR-JUL	6586.0	4830.0	73	5750.0	87	3905.0	59
	APR-SEP	7150.0	5260.0	74	6260.0	88	4260.0	60

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CAMAS (4)	45.2	15.5	27.7	23.8
MISSION VALLEY (8)	100.0	31.5	35.2	41.3
HUNGRY HORSE	3451.0	843.0	2336.0	2098.0
FLATHEAD LAKE	1791.0	868.0	641.0	753.0

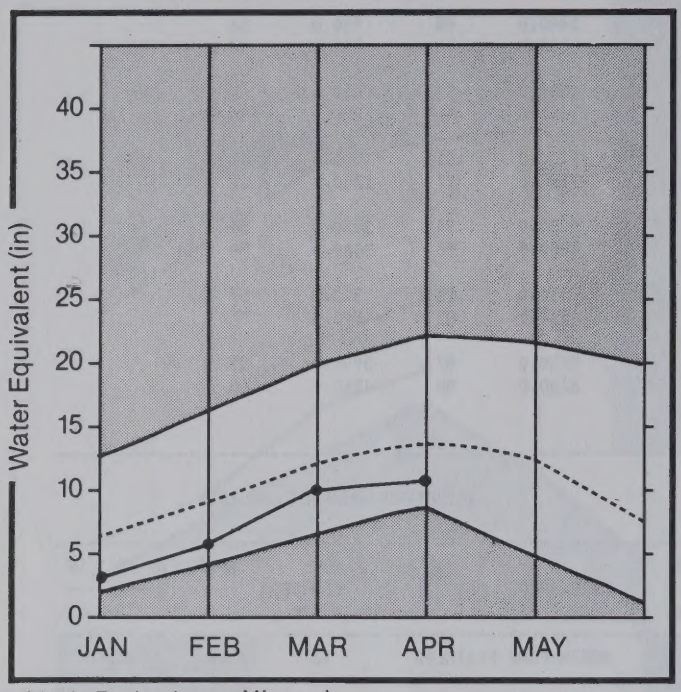
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
NORTH FORK FLATHEAD	16	89	76
MIDDLE FORK FLATHEAD	12	98	79
SOUTH FORK FLATHEAD	13	103	75
STILLWATER-WHITEFISH	9	90	71
SWAN	12	107	77
LITTLE BITTERROOT	8	94	61
FLATHEAD	50	98	76

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin above Missoula

Mountain snowpack* (inches)



*Clark Fork above Missoula

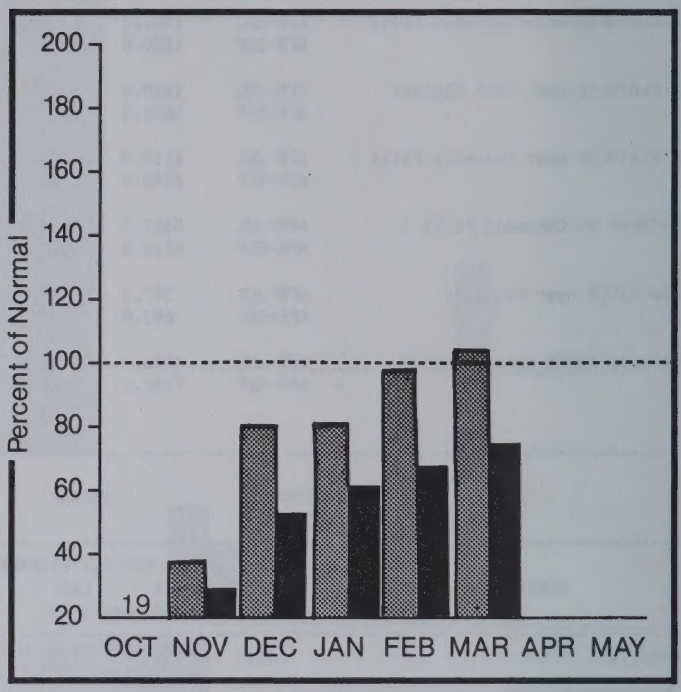
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was near average for the second month in a row. Snowpacks have improved a little but continue to contain below average amounts of water. Spring and summer streamflows are forecast well below average. Shortages in irrigation water supplies are expected to develop by mid-June.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MOULTON RESERVOIR Inflow (MG)2	APR-JUN	237.0	152.0	64	210.0	89	95.0	40
	APR-JUL	263.0	170.0	65	230.0	87	105.0	40
WARM SPRINGS CR at Mevers Dam 2	APR-JUL	39.0	25.0	64	34.0	87	16.0	41
	APR-SEP	49.0	32.0	65	44.0	90	20.0	41
FLINT CREEK near Southern Cross 2	APR-JUL	14.8	9.1	61	14.0	95	4.0	27
	APR-SEP	17.8	10.3	58	16.0	90	4.0	22
FLINT CREEK below Boulder Creek 2	APR-JUL	61.0	40.0	66	61.0	100	19.0	31
	APR-SEP	78.0	51.0	65	78.0	100	24.0	31
LOWER WILLOW CR RES Inflow 2	APR-JUL	14.9	9.0	60	14.0	94	4.0	27
	APR-SEP	15.8	9.8	62	15.0	95	4.0	25
M. FK. ROCK CRK near Philipsburg	APR-JUL	69.0	52.0	75	69.0	100	35.0	51
	APR-SEP	77.0	58.0	75	76.0	99	40.0	52
NEVADA CREEK near Finn	APR-JUL	21.0	12.5	60	20.0	95	5.0	24
	APR-SEP	22.0	13.5	61	21.0	95	6.0	27
BLACKFOOT RIVER near Bonner	APR-JUL	874.0	560.0	64	680.0	78	440.0	50
	APR-SEP	969.0	655.0	68	870.0	90	390.0	40
CLARK FORK RIVER above Milltown 2	APR-JUL	703.0	430.0	61	640.0	91	220.0	31
	APR-SEP	812.0	510.0	63	755.0	93	265.0	33
CLARK FORK RIVER above Missoula	APR-JUL	1577.0	995.0	63	1370.0	87	620.0	39
	APR-SEP	1781.0	1170.0	66	1600.0	90	710.0	40

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GEORGETOWN LAKE	31.0	26.6	29.1	24.4
LOWER WILLOW CREEK	4.9	2.2	1.7	2.2
NEVADA CREEK	12.6	2.6	6.0	7.5

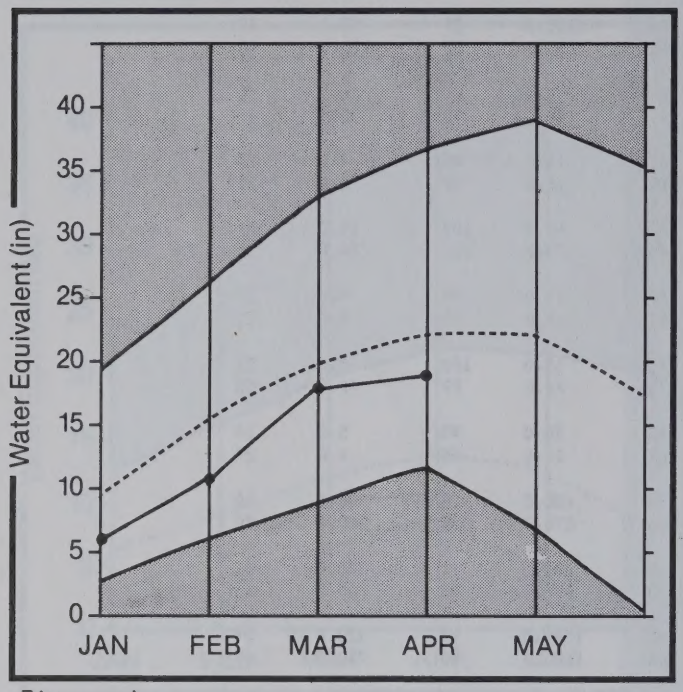
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab BLACKFOOT	43	118	76
BLACKFOOT	21	118	74
CLARK FORK above MISSOULA	59	118	75

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin below Missoula

Mountain snowpack* (inches)



*Bitterroot

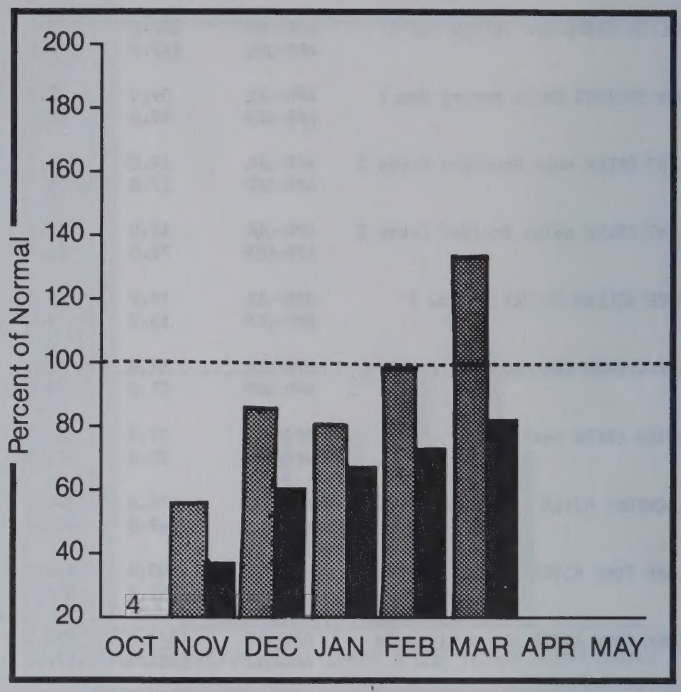
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

During March, mountain precipitation was above average. The snowpack has improved but remains below average. Snowpack in the Bitterroot drainage is somewhat better than in the lower Clark Fork drainages. Streams are forecast to have below average runoff this spring and summer. Irrigation water supply shortages are expected to develop by mid to late June.

For more information contact your local Soil Conservation Office

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
CLARK FORK RIVER above Missoula	APR-JUL	1577.0	995.0	63	1370.0	87	620.0	39
	APR-SEP	1781.0	1170.0	66	1600.0	90	710.0	40
W.F. BITTERROOT RIVER nr Conner 2	APR-JUL	147.0	107.0	73	142.0	97	72.0	49
	APR-SEP	169.0	125.0	74	166.0	98	84.0	50
BITTERROOT RIVER near Darby	APR-JUL	524.0	380.0	73	505.0	96	255.0	49
	APR-SEP	573.0	420.0	73	560.0	98	280.0	49
SKALKAHO CREEK near Hamilton	APR-JUL	46.0	35.0	76	41.0	89	29.0	63
	APR-SEP	54.0	41.0	76	49.0	91	33.0	61
BURNT FORK CR nr Stevensville 2	APR-JUL	32.0	23.0	72	31.0	97	15.0	47
	APR-SEP	38.0	28.0	74	37.0	97	19.0	50
BITTERROOT RIVER at Missoula 2	APR-JUL	1371.0	980.0	71	1310.0	96	650.0	47
	APR-SEP	1497.0	1080.0	72	1440.0	96	720.0	48
CLARK FORK RIVER below Missoula	APR-JUL	2948.0	1980.0	67	2450.0	83	1510.0	51
	APR-SEP	3276.0	2250.0	69	2950.0	90	1310.0	40
CLARK FORK RIVER at St. Regis	APR-JUL	3894.0	2730.0	70	3705.0	95	1755.0	45
	APR-SEP	4325.0	3030.0	70	4110.0	95	1950.0	45
CLARK FORK RIVER near Plains 2	APR-JUL	10850.0	7860.0	72	9900.0	91	5800.0	53
	APR-SEP	11930.0	8640.0	72	10900.0	91	6320.0	53
THOMPSON RIVER near Thompson Falls	APR-JUL	222.0	117.0	53	166.0	75	68.0	31
	APR-SEP	250.0	140.0	56	195.0	78	85.0	34
PROSPECT CREEK at Thompson Falls	APR-JUL	128.0	85.0	66	116.0	91	54.0	42
	APR-SEP	137.0	94.0	69	127.0	93	61.0	45
CLARK FORK at Whitehorse Rapids 2	APR-JUL	12150.0	8730.0	72	11200.0	92	6300.0	52
	APR-SEP	13370.0	9610.0	72	12300.0	92	6900.0	52

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
PAINTED ROCKS LAKE	31.7	0.0	---	15.7
NOXON RAPIDS	335.0	306.3	326.7	213.6
COMO	34.9	7.3	10.9	15.5

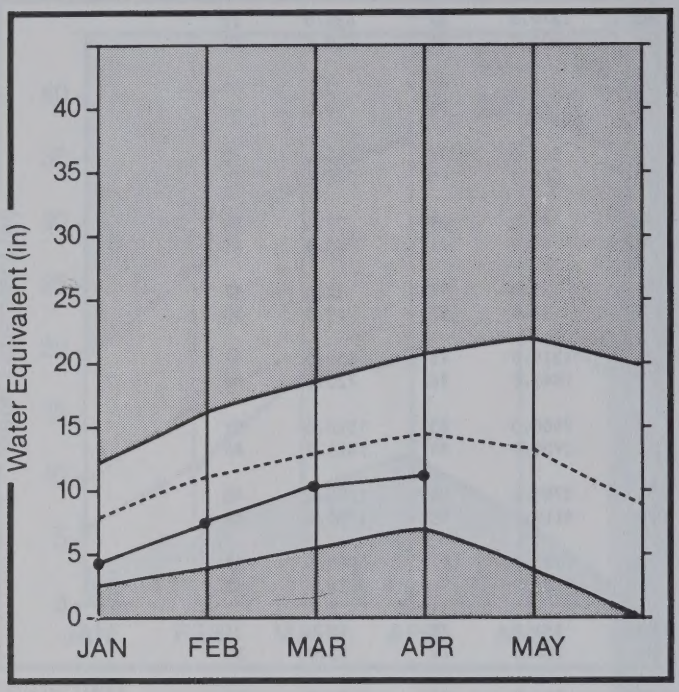
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK above MISSOULA	59	118	75
BITTERROOT	25	133	84
LWR CLARK FK blw MISSOULA	23	107	74
BITTERROOT & LWR C.F.	46	118	78
CLARK FORK TOTAL	99	117	77
FLATHEAD	49	98	77
PEND O'REILLE	142	108	76

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Jefferson Basin

Mountain snowpack* (inches)



*Jefferson

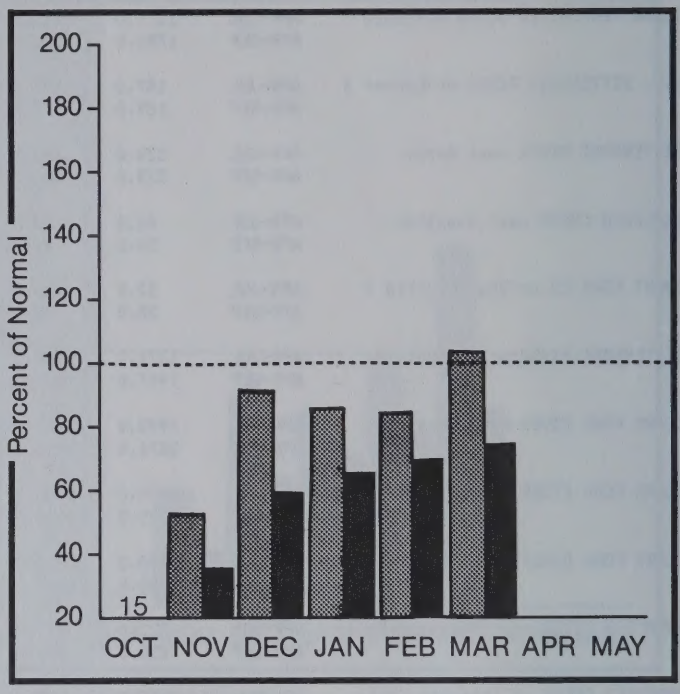
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was about average over the basin. The northern part of the drainage reported near to above average moisture while southern areas reported below average. Snowpacks showed a slight improvement but remain below average. Spring and summer runoff is forecast to be well below average. Irrigation water supplies will be quite scarce starting around mid-June.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
RED ROCK RIVER near Monida 2	APR-JUL	105.0	60.0	57	92.0	88	29.0	28
	APR-SEP	114.0	64.0	56	98.0	86	30.0	26
BEAVERHEAD RIVER near Grant 2	APR-JUL	149.0	62.0	42	107.0	72	24.0	16
	APR-SEP	174.0	70.0	40	122.0	70	24.0	14
BEAVERHEAD RIVER at Barratts 2	APR-JUL	192.0	88.0	46	146.0	76	30.0	16
	APR-SEP	224.0	105.0	47	172.0	77	38.0	17
RUBY RIVER near Alder	APR-JUL	89.0	59.0	66	81.0	91	37.0	42
	APR-SEP	106.0	71.0	67	98.0	92	45.0	42
BIG HOLE RIVER near Melrose	APR-JUL	696.0	450.0	65	624.0	90	275.0	40
	APR-SEP	757.0	490.0	65	680.0	90	300.0	40
WILLOW CREEK near Harrison	APR-JUL	18.7	13.5	72	19.0	102	8.0	43
	APR-SEP	21.0	15.3	73	22.0	105	9.0	43

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LIMA	84.0	15.8	34.5	39.1
CLARK CANYON	255.6	175.7	165.9	152.7
RUBY RIVER	38.8	31.9	36.0	31.0

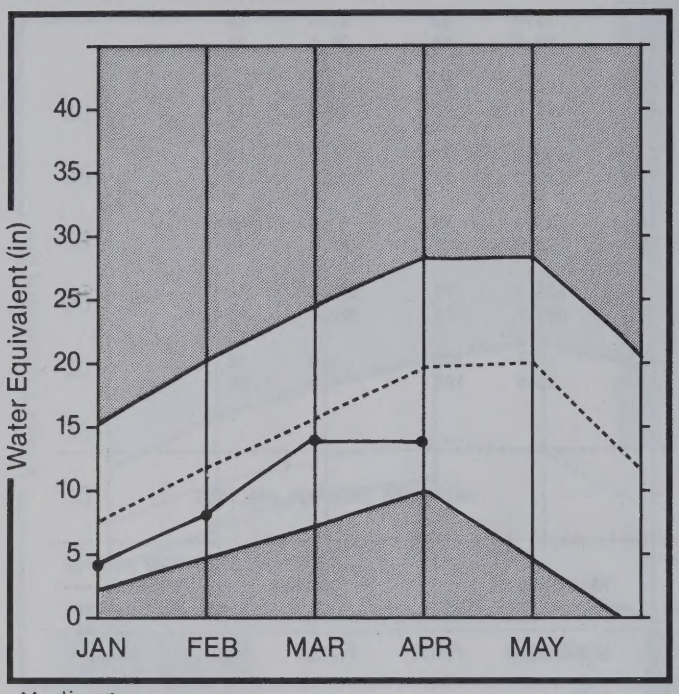
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
BEAVERHEAD	35	105	71
RUBY	14	96	72
BIGHOLE	30	119	76
BOULDER	15	113	76
JEFFERSON	75	110	74

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Madison Basin

Mountain snowpack* (inches)



*Madison

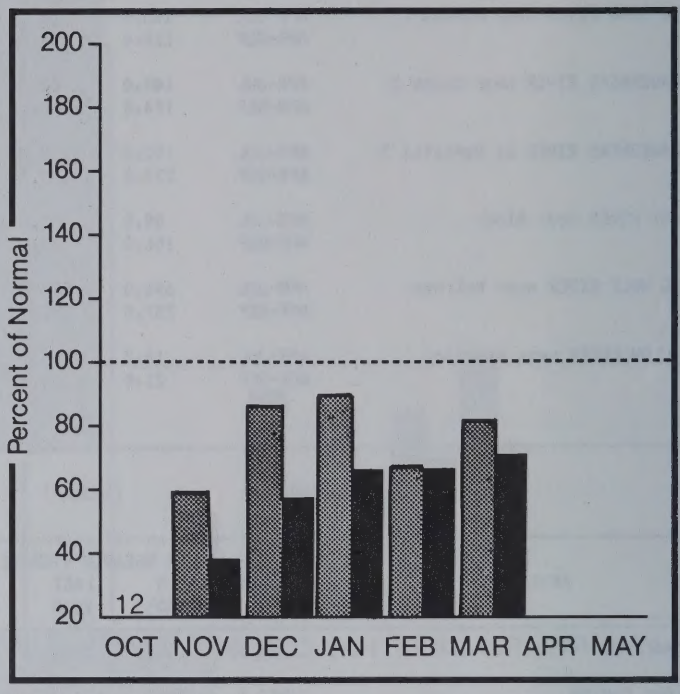
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation during March was below average over the basin. Snowpacks remain below average. Runoff during spring and summer months is forecast to be below average.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MADISON RIVER near Gravling 2	APR-JUL	390.0	305.0	78	365.0	94	245.0	63
	APR-SEP	499.0	390.0	78	465.0	93	315.0	63
MADISON RIVER near McAllister 2	APR-JUL	680.0	525.0	77	635.0	93	415.0	61
	APR-SEP	856.0	655.0	77	790.0	92	520.0	61

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
ENNIS LAKE	41.0	31.1	30.2	33.7
HEBGEN LAKE	377.5	279.6	289.8	241.1

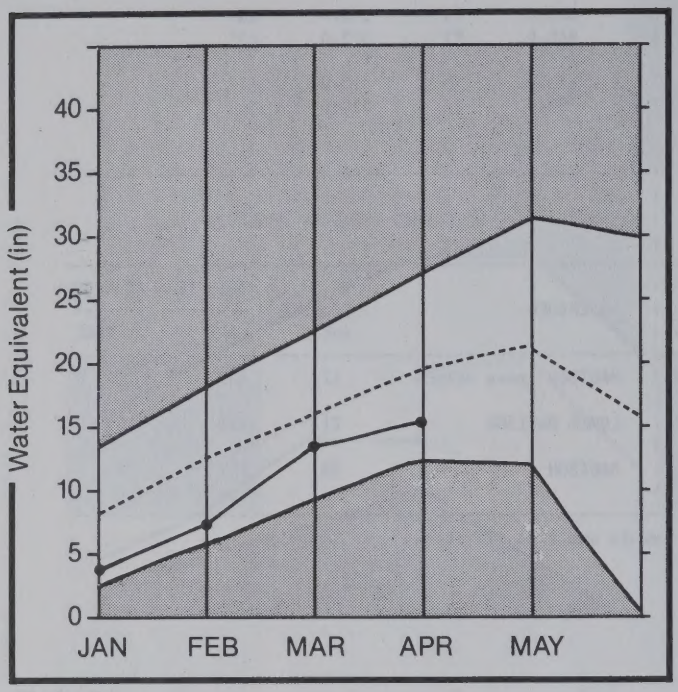
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MADISON above HEBGEN	17	137	75
LOWER MADISON	21	108	72
MADISON	38	121	74

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Gallatin Basin

Mountain snowpack* (inches)



*Gallatin

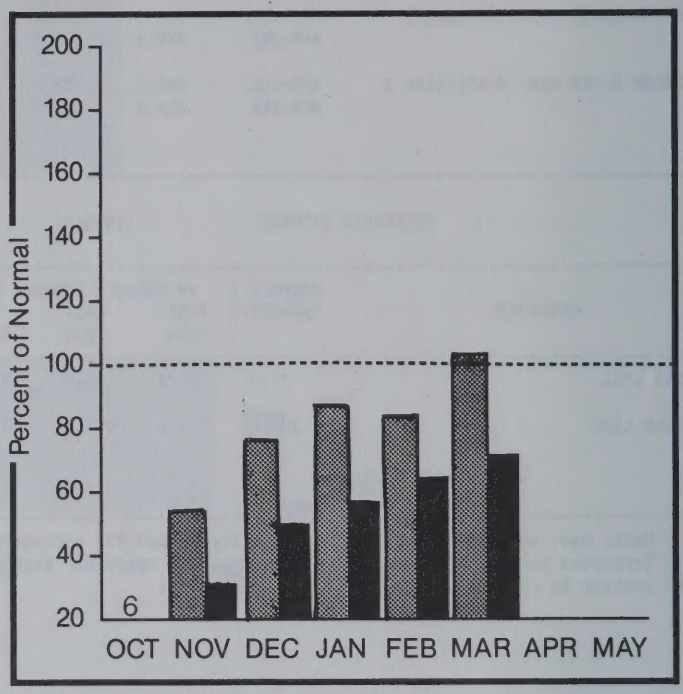
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was about average over the basin. Snowpack improved during the month particularly in the Bridger Mountains and Hyalite Creek Drainage. However, the water content of the snowpack remains below average. Runoff during the spring and summer is forecast to be below average. Shortages of irrigation water supplies are expected to develop by late June.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
GALLATIN RIVER near Gateway	APR-JUL	460.0	325.0	71	400.0	87	250.0	54
	APR-SEP	540.0	380.0	70	465.0	86	295.0	55
E & W FK. HYALITE CR. nr Bozeman 2	APR-JUL	24.0	20.5	85	24.0	100	17.0	71
	APR-SEP	28.0	24.0	86	28.0	100	20.0	71
HYALITE CREEK near Bozeman 2	APR-JUL	38.0	32.0	84	40.0	105	24.0	63
	APR-SEP	44.0	37.0	84	46.0	105	28.0	64
GALLATIN RIVER at Logan	APR-JUL	528.0	310.0	59	440.0	83	180.0	34
	APR-SEP	616.0	370.0	60	525.0	85	215.0	35

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MIDDLE CREEK	8.0	5.7	5.1	3.9

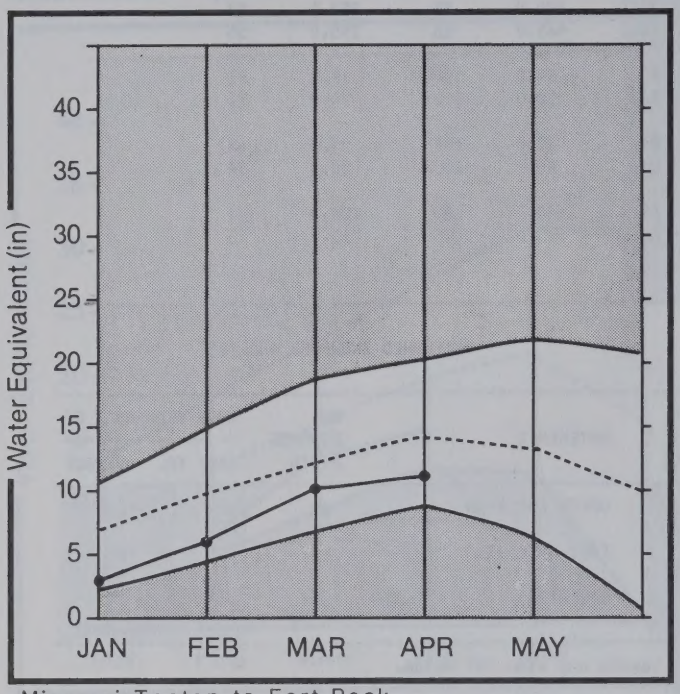
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
UPPER GALLATIN	15	120	75
EAST GALLATIN	13	135	85
GALLATIN	25	126	79

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Missouri Basin

Mountain snowpack* (inches)



*Missouri Toston to Fort Peck

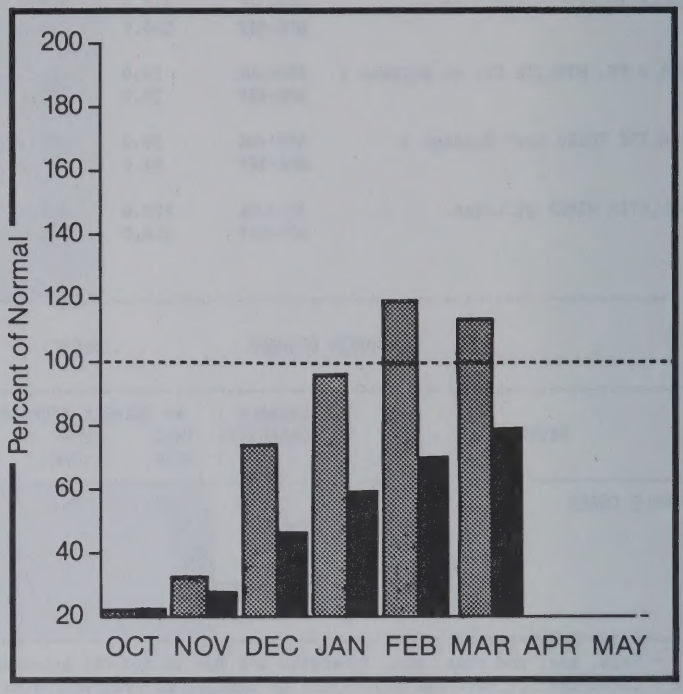
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Precipitation across the mountains was a little above average for March. The snowpack improved over the month but remains below average in all areas except the Snowy Mountains which is near average. Spring and summer streamflows are forecast to be well below average. Shortages of irrigation water supplies are expected to develop by mid-June.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MISSOURI RIVER at Toston 2	APR-JUL	2250.0	1400.0	62	2180.0	97	875.0	39
	APR-SEP	2590.0	1640.0	63	2510.0	97	1010.0	39
SHEEP CREEK nr White Sulphur Sags.	APR-JUL	18.8	12.6	67	20.0	106	5.0	27
	APR-SEP	22.0	15.0	68	23.0	105	7.0	32
BELT CREEK near Monarch	APR-JUL	123.0	75.0	61	117.0	95	33.0	27
	APR-SEP	134.0	83.0	62	129.0	96	37.0	28
MISSOURI RIVER at Fort Benton 2	APR-JUL	3470.0	2060.0	59	3400.0	98	1390.0	40
	APR-SEP	3990.0	2320.0	58	3900.0	98	1600.0	40
MISSOURI RIVER at Virgelle 2	APR-JUL	3960.0	2400.0	61	4000.0	101	1620.0	41
	APR-SEP	4500.0	2645.0	59	4520.0	100	1850.0	41
MISSOURI RIVER near Landusky 2	APR-JUL	4310.0	2640.0	61	4570.0	106	1900.0	44
	APR-SEP	4900.0	2900.0	59	5200.0	106	2160.0	44
N.F. MUSSELSHELL near Delpine	APR-JUL	5.6	3.5	63	6.0	107	1.0	18
	APR-SEP	6.4	4.2	66	7.0	109	2.0	31
S.F. MUSSELSHELL above Martinsdale	APR-JUL	57.0	34.0	60	56.0	98	12.0	21
	APR-SEP	61.0	36.0	59	59.0	97	13.0	21
MISSOURI RIVER below Fort Peck 2	APR-JUL	4260.0	2490.0	58	4560.0	107	1750.0	41
	APR-SEP	4800.0	2740.0	57	5140.0	107	1970.0	41
LAKE SAKAKAWEA Inflow 2	APR-JUL	11000.0	6950.0	63	11500.0	105	4730.0	43
	APR-SEP	12200.0	7810.0	64	12800.0	105	5250.0	43

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CANYON FERRY LAKE	2043.0	1436.0	1566.0	1502.0
HELENA VALLEY	9.2	4.4	3.9	4.5
LAKE HELENA	10.4	10.9	10.9	10.0
HAUSER & HELENA	61.9	63.1	63.1	60.6
HOLTER LAKE	81.9	80.5	69.9	65.0
SMITH RIVER	10.6	3.2	8.4	7.8
NEWLAN CREEK	12.4	9.1	10.6	8.9
BAIR	7.0	2.2	6.6	4.9
MARTINSDALE	23.1	3.6	12.8	10.2
DEADMAN'S BASIN	72.2	44.2	64.0	52.0
FORT PECK LAKE*	18.9	14.7	15.9	15.1

*Million Acre Feet

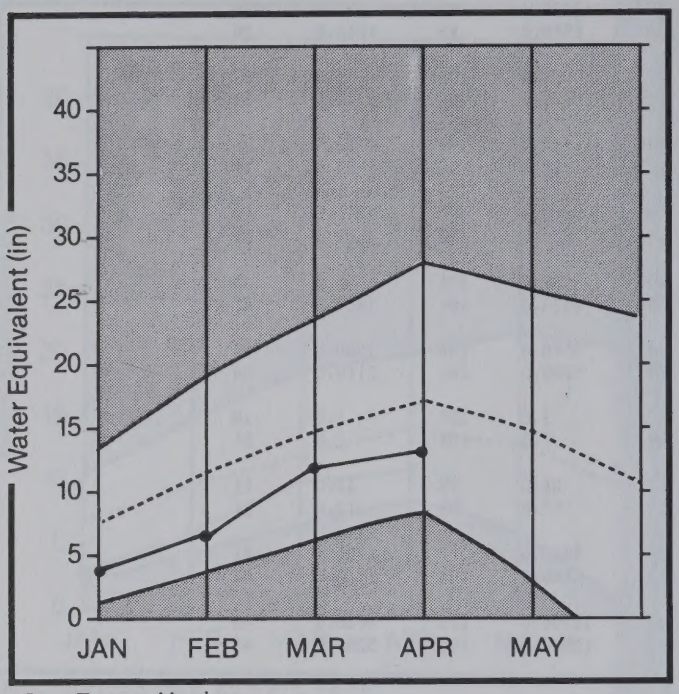
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MISSOURI HEADWATERS	121	117	75
WEST SIDE MISSOURI	10	124	78
SMITH-BELT	11	139	77
MISSOURI MAINSTEM	21	133	77
SUN-TETON-MARIAS	18	98	79
JUDITH-MUSSELSHELL	20	140	80
MISSOURI above FORT PECK	165	117	76
MILK HEADWATERS	5	85	69
BEAR PAW	7	141	70
MILK RIVER	12	93	70
MISSOURI in MONTANA	174	117	76
MISSOURI blw YELLOWSTONE	281	111	78

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Sun, Teton and Marias Basins

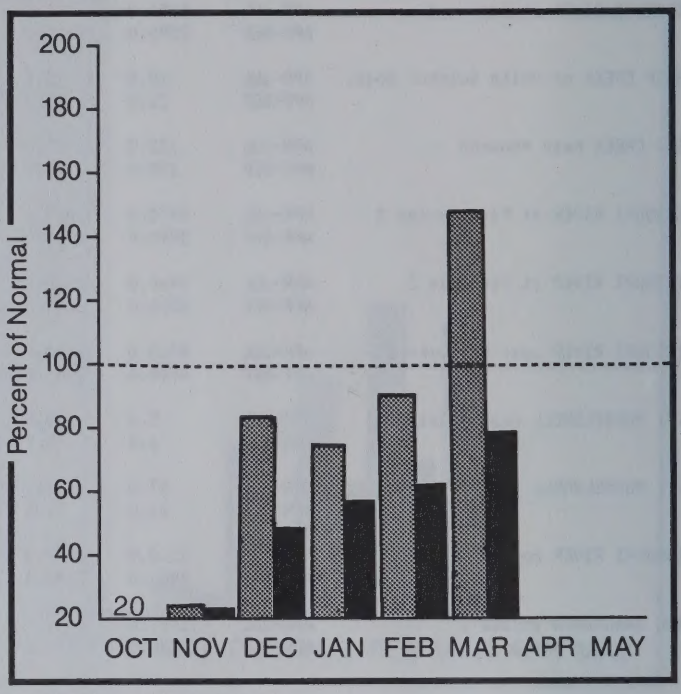
Mountain snowpack* (inches)



*Sun-Teton-Marias

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

Water Supply Outlook

For the first month of this year, mountain precipitation was above average. The snowpack showed some improvement but remains below average. April through September runoff is forecast to be below average. Shortages of irrigation water supplies on streams not having reservoir storage can be expected to develop by mid to late June.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SUN RIVER at Gibson Dam 2	APR-JUL	494.0	335.0	68	445.0	90	225.0	46
	APR-SEP	542.0	375.0	69	495.0	91	255.0	47
TWO MEDICINE CREEK near Browning 2	APR-JUL	222.0	170.0	77	245.0	110	95.0	43
	APR-SEP	235.0	177.0	75	250.0	106	100.0	43
BADGER CREEK near Browning	APR-JUL	107.0	84.0	79	120.0	112	48.0	45
	APR-SEP	123.0	98.0	80	137.0	111	59.0	48
SWIFT RESERVOIR Inflow nr Dupuyer	APR-JUL	70.0	60.0	86	84.0	120	36.0	51
	APR-SEP	82.0	71.0	87	97.0	118	45.0	55
CUT BANK CREEK at Cut Bank	APR-JUL	92.0	69.0	75	100.0	109	38.0	41
	APR-SEP	100.0	75.0	75	107.0	107	43.0	43
MARIAS RIVER near Shelby	APR-JUL	478.0	315.0	66	470.0	98	165.0	35
	APR-SEP	501.0	340.0	68	500.0	100	180.0	36

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GIBSON	99.1	57.7	63.2	48.9
PISHKUN	32.0	17.9	17.2	18.7
WILLOW CREEK	32.2	24.4	28.5	22.0
LOWER TWO MEDICINE LAKE	11.9	10.3	12.0	9.0
FOUR HORNS LAKE	19.2	13.7	13.5	12.4
SWIFT	30.0	25.0	23.7	16.4
LAKE FRANCES	112.0	91.7	83.9	69.6
LAKE ELWELL (TIBER)	1347.0	667.9	696.6	572.2

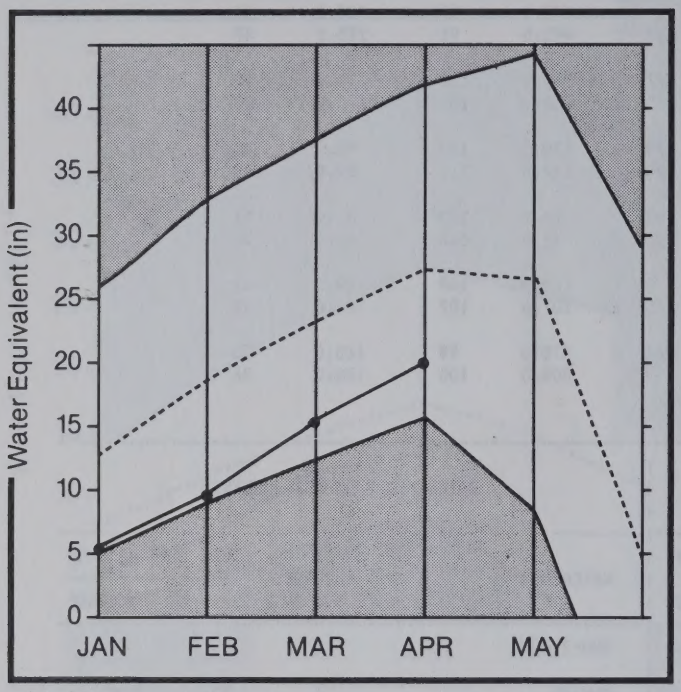
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
SUN-TETON	12	100	77
MARIAS	7	95	80
SUN-TETON-MARIAS	18	98	79

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

St. Mary and Milk Basins

Mountain snowpack* (inches)



* St. Mary

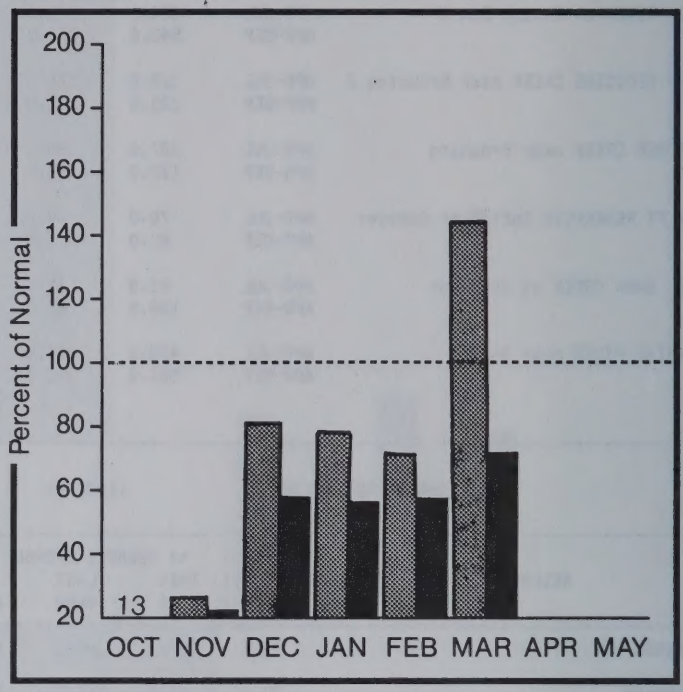
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was above average in March. This was the first month this year to have above average moisture. The snowpack has improved but remains below average. Spring and summer streamflows are forecast to be below average.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SWIFTCURRENT CREEK at Sherburne 2	APR-JUL	110.0	84.0	76	106.0	96	62.0	56
	APR-SEP	128.0	98.0	77	124.0	97	72.0	56
ST. MARY RIVER near Babb 2	APR-JUL	404.0	305.0	75	360.0	89	250.0	62
	APR-SEP	474.0	365.0	77	430.0	91	300.0	63
MILK RIVER at Eastern Crossing	APR-SEP	73.0	45.0	62	75.0	103	36.0	49
MILK RIVER at Eastern Crossing 2	APR-SEP	239.0	214.0	90	120.0	50	79.0	33

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE SHERBURNE	64.3	25.6	25.6	23.3
FRESNO	127.0	69.8	86.8	77.3
BEAVER CREEK	3.5	3.0	3.3	2.3
NELSON	66.8	41.4	41.4	36.6

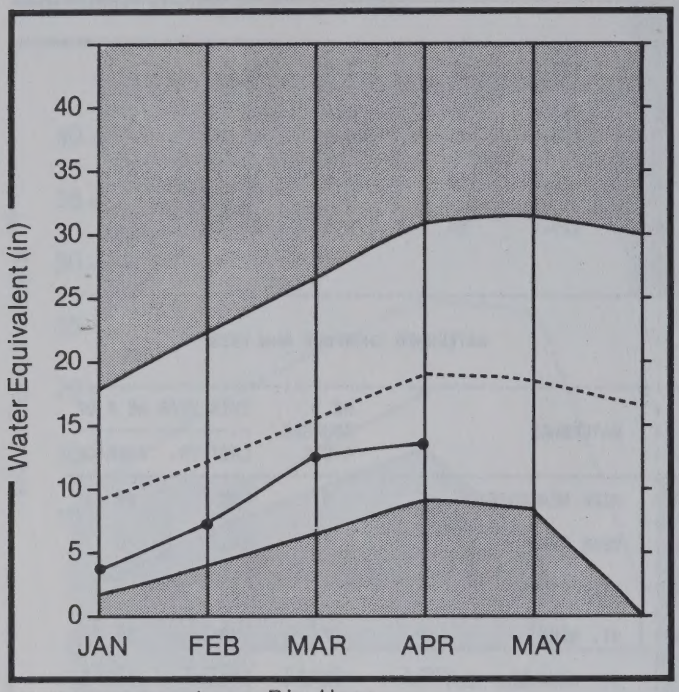
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MILK HEADWATERS	5	85	69
BEAR PAW	7	141	70
MILK RIVER	12	93	70
ST. MARY	7	89	72
ST. MARY and MILK	14	94	71
BOW RIVER in ALBERTA	20	94	91
OLDMAN RIVER in ALBERTA	7	86	88

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Yellowstone Basin

Mountain snowpack* (inches)



*Yellowstone above Big Horn

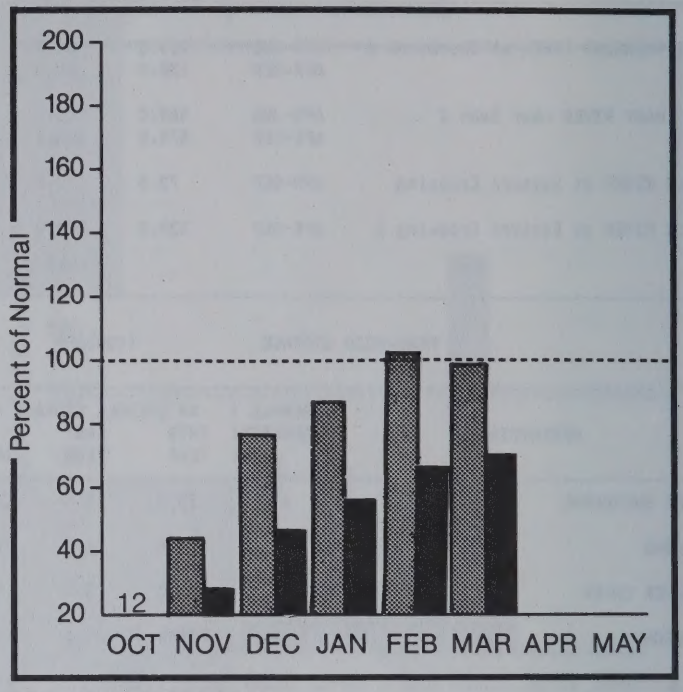
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

During March, mountain precipitation was about average in the Upper Yellowstone River Drainage. Snowpack water content showed some improvement in the past month but continued below average. Forecasts of spring and summer streamflows are for below average runoff. Shortages of irrigation water supplies on drainages above the Bighorn are expected to develop on streams with lower elevation headwaters by mid-June and on other streams by late June to early July.

For more information contact your local Soil Conservation Office

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
YELLOWSTONE at Lake Outlet	APR-JUL	590.0	390.0	66	465.0	79	315.0	53
	APR-SEP	818.0	550.0	67	655.0	80	445.0	54
YELLOWSTONE at Corwin Springs	APR-JUL	1650.0	1015.0	62	1250.0	76	785.0	48
	APR-SEP	2000.0	1230.0	62	1510.0	76	950.0	48
YELLOWSTONE near Livingston	APR-JUL	1920.0	1250.0	65	1520.0	79	980.0	51
	APR-SEP	2330.0	1540.0	66	1870.0	80	1210.0	52
BOULDER RIVER at Big Timber	APR-JUL	353.0	265.0	75	340.0	96	190.0	54
	APR-SEP	384.0	280.0	73	365.0	95	195.0	51
STILLWATER RIVER nr Absarokee 2	APR-JUL	524.0	385.0	73	540.0	103	230.0	44
	APR-SEP	625.0	460.0	74	650.0	104	275.0	44
CLARKS FORK RIVER near Belfry	APR-JUL	540.0	370.0	69	505.0	94	235.0	44
	APR-SEP	603.0	420.0	70	570.0	95	270.0	45
COONEY RESERVOIR Inflow	APR-JUL	49.0	29.0	59	44.0	90	14.0	29
	APR-SEP	60.0	36.0	60	54.0	90	18.0	30
YELLOWSTONE RIVER at Billings	APR-JUL	3740.0	2580.0	69	3250.0	87	2000.0	53
	APR-SEP	4410.0	3000.0	68	3840.0	87	2380.0	54
BIGHORN RIVER near St. Xavier 2	APR-JUL	1750.0	1300.0	74	2170.0	124	735.0	42
	APR-SEP	1900.0	1420.0	75	2350.0	124	800.0	42
LITTLE BIGHORN RIVER near Hardin	APR-JUL	148.0	140.0	95	230.0	155	65.0	44
	APR-SEP	167.0	155.0	93	260.0	156	73.0	44
TONGUE RIVER near Decker	APR-JUL	234.0	205.0	88	320.0	137	82.0	35
	APR-SEP	260.0	220.0	85	355.0	137	91.0	35
YELLOWSTONE RIVER at Miles City 2	APR-JUL	5640.0	3950.0	70	5800.0	103	2800.0	50
	APR-SEP	6510.0	4570.0	70	6640.0	102	3120.0	48
POWDER RIVER at Moorehead	APR-JUL	230.0	160.0	70	295.0	128	55.0	24
	APR-SEP	251.0	175.0	70	320.0	127	60.0	24
YELLOWSTONE RIVER near Sidney 2	APR-JUL	6260.0	4390.0	70	6450.0	103	2755.0	44
	APR-SEP	7200.0	4920.0	68	7410.0	103	3170.0	44

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MYSTIC LAKE	21.0	0.3	1.6	3.6
COONEY	27.4	23.7	22.1	15.9
BIGHORN LAKE	1356.0	840.3	807.2	670.0
TONGUE RIVER	68.0	28.4	23.6	37.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	26	116	70
SHIELDS	10	136	75
BOULDER-STILLWATER	12	103	80
CLARK'S FORK-ROCK CREEK	21	108	72
YELLOWSTONE above BIGHORN	55	113	74
LITTLE BIGHORN	5	115	91
WIND RIVER (Wyoming)	31	86	90
BIGHORN RIVER (Wyoming)	32	103	81
BIGHORN BASIN (Total)	58	96	85
TONGUE RIVER (Wyoming)	15	112	94
POWDER RIVER (Wyoming)	14	104	87
YELLOWSTONE RIVER	123	105	80

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

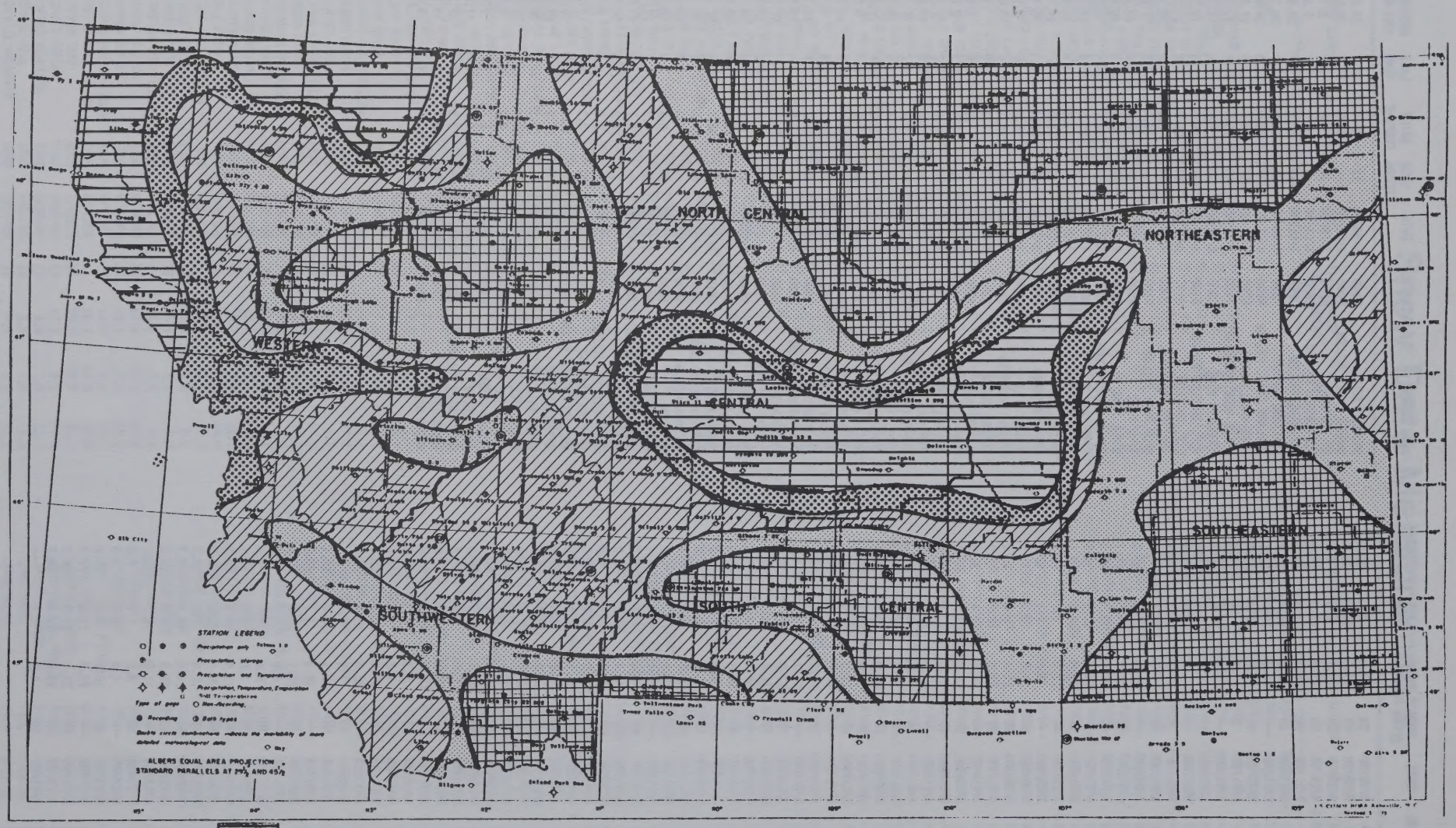
Snow Data Measurements

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
MONTANA						
ABUNDANCE LAKE	8800	3/28/88	57	15.6	14.9	21.5
AMBROSE	6480	3/28/88	35	12.2	8.1	13.6
ARCH FALLS	7350	3/30/88	46	12.0	8.8	13.2
ASHLEY DIVIDE	4820	4/01/88	16	4.6	4.2	7.0
BADGER PASS PILLOW	6900	4/01/88	---	31.1	30.3	36.4
BADGER PASS	6900	4/08/88	93	34.8	31.2	38.8
BALD EAGLE PEAK	5700	3/25/88	117	41.5E	41.7	61.9
BALD RIDGE	7500	3/31/88	38	11.6	8.3	13.9
BANFIELD MTN PILLOW	5600	4/01/88	---	14.3	15.2	21.1
BANFIELD MOUNTAIN	5600	3/27/88	54	15.2	23.0	23.7
BAREE CREEK	5500	3/30/88	92	33.0	33.5	47.2
BAREE MIDWAY	4600	3/30/88	82	28.8	24.8	36.6
BAREE TRAIL	3800	3/30/88	16	4.7	5.8	8.7
BARKER LAKES	8250	3/30/88	47	12.8	11.1	15.9
BARKER LAKES PILLOW	8250	4/01/88	---	12.5	12.4	16.3
BASIN CREEK	7180	3/28/88	27	6.1	8.5	9.2
BASIN CREEK PILLOW	7180	4/01/88	---	6.4	7.5	8.9
BASSOO PEAK	5150	4/01/88	23	7.1	6.6	11.9
BEAGLE SPRINGS	8850	3/28/88	34	8.2	8.4	10.2
BEAGLE SPGS PILLOW	8850	4/01/88	---	7.3	7.9	9.4
BEAR BASIN	8150	3/28/88	59	18.8	13.4	21.9
BEAR PAW SKI AREA	5200	3/28/88	31	6.4	2.1	7.4
BEAVER CREEK PILLOW	7850	4/01/88	---	13.1	11.2	19.9
BERRY MEADOW	7000	4/01/88	21	6.3	5.6	8.2
BIG CREEK	6750	3/31/88	91	33.8	34.4	46.6
BIG SKY	7700	4/04/88	41	15.4	11.0	16.8
BIG SKY MEADOW	6350	3/28/88	22	5.6	6.5	9.8
BIG SNOWY	7150	3/31/88	67	19.4	16.4	22.7
BLACK BEAR	7950	4/04/88	97	36.0	20.2	43.2
BLACK BEAR PILLOW	7950	4/01/88	---	31.1	23.3	39.3
BLACK PINE PILLOW	7100	4/01/88	---	12.2	9.3	15.0
BLACK PINE	7100	3/28/88	33	10.4	8.5	14.0
BLACKTAIL	5650	3/31/88	39	11.0	10.4	--
BLOODY DICK PILLOW	7550	4/01/88	---	10.1	8.8	13.2
BLOODY DICK	7600	3/28/88	39	10.6	8.4	14.2
BLUE LAKE	5900	4/08/88	54	21.2	20.0	25.9
BOTS SOTS	7750	3/30/88	31	7.4	6.0	8.3
BOULDER MOUNTAIN	7950	3/28/88	55	15.9	12.0	20.1
BOULDER MTN PILLOW	7950	4/01/88	---	17.1	14.3	22.1
BOX CANYON	6670	3/31/88	33	11.0	6.9	12.4
BOX CANYON PILLOW	6700	4/01/88	---	8.7	6.9	10.2
BOXELDER CREEK	5100	3/28/88	34	6.7	6.8	8.7
BRANHAM LAKES	8850	3/30/88	82	24.8	26.4	30.9
BRIDGER BOWL PILLOW	7250	3/29/88	---	19.9	15.9	27.5
BRIDGER BOWL	7250	3/29/88	69	19.6	16.0	28.0
BRISTOW CREEK	3900	3/27/88	22	6.0	5.2	9.6
BRUSH CREEK TIMBER	5000	3/29/88	21	5.7	6.2	9.9
BULL MOUNTAIN	6600	3/31/88	11	4.6	5.5	6.5
CABIN CREEK	5200	3/25/88	21	5.6	5.1	6.3
CALL ROAD	8050	3/29/88	39	10.5	10.3	12.8
CALVERT CREEK	6430	3/25/88	32	8.0	6.7	12.0
CALVERT CR PILLOW	6430	4/01/88	---	7.1	4.9	9.1
CAMP MISERY	6400	3/27/88	92	35.4	35.2	50.1
CAMP SENIA	7890	3/30/88	26	5.6	4.4	6.9
CARROT BASIN PILLOW	9000	4/01/88	---	19.3	20.1	29.2
CARROT BASIN	9000	3/30/88	76	25.2	24.2	37.7
CARTER CREEK	7400	3/28/88	19	4.0	5.6	6.0
CASHE CREEK PILLOW	7800	4/01/88	---	9.2	7.7	10.6
CEDAR GROVE	3760	3/25/88	31	8.7	10.6	12.2
CHESSMAN RESERVOIR	6200	3/30/88	18	4.0	1.2	4.0
CHICKEN CREEK	4060	3/29/88	38	13.8	10.9	14.1
CLOVER MDW PILLOW	8800	4/01/88	---	13.7	15.1	18.5
CLOVER MEADOW	8600	3/29/88	46	12.2	9.9	18.9
COLE CREEK	7850	3/28/88	40	11.0	17.6	18.4
COLE CREEK PILLOW	7850	4/01/88	---	12.2	18.1	18.3
COLLEY CREEK	6300	3/26/88	27	7.4	4.8	8.9
COMBINATION	5600	3/27/88	18	5.1	3.1	6.3
COMBINATION PILLOW	5600	4/01/88	---	5.3	2.5	6.5
COOKE STATION	8150	3/30/88	50	14.6	12.1	20.2
COPPER BOTTOM	5200	4/08/88	25	10.1	7.8	10.8
COPPER BOTTOM PILLOW	5200	4/01/88	---	10.5	8.9	13.3
COPPER CAMP PILLOW	6950	4/01/88	---	26.3	20.9	35.9
COPPER CAMP	6950	4/08/88	65	25.7	19.6	31.4
COPPER CREEK	5700	4/08/88	33	12.5	9.5	14.9
COPPER MOUNTAIN	7700	3/28/88	31	8.4	7.0	12.1
COYOTE HILL	4200	4/01/88	24	9.5	7.0	9.8
CREVICE MOUNTAIN	8400	3/31/88	32	7.7	5.9	11.1
CRYSTAL LAKE	6050	3/31/88	48	14.6	10.9	14.8
CRYSTAL LAKE PILLOW	6050	4/01/88	---	14.7	9.1	15.5
DAD CREEK LAKE	8400	3/28/88	53	13.0	14.6	15.1
DAISY PEAK	7600	3/28/88	29	7.7	6.2	11.7
DALY CREEK	5780	3/28/88	37	11.4	9.3	12.4
DALY CREEK PILLOW	5780	4/01/88	---	10.4	8.2	12.6
DARKHORSE LK. PILLOW	8700	4/01/88	---	19.4	17.4	25.1
DARKHORSE LAKE	8600	3/28/88	63	21.0	15.0	28.1
DAVIS CREEK	5400	3/27/88	67	19.8	19.5	24.3
DEADMAN CR PILLOW	6450	4/01/88	---	9.6	5.9	10.8
DEADMAN CREEK	6450	3/30/88	32	9.2	5.3	11.8
DESERT MOUNTAIN	5600	3/27/88	42	11.9	12.0	16.2
DEVILS SLIDE	8100	3/30/88	68	18.9	14.7	23.0
DISCOVERY BASIN	7050	3/28/88	29	8.8	7.4	11.8
DIVIDE	7800	3/29/88	31	7.4	8.4	12.0
DIVIDE PILLOW	7800	4/01/88	---	8.0	8.1	12.5
DIX HILL	6400	3/27/88	27	9.1	8.2	11.5
DUPUYER CREEK PILLOW	5750	4/01/88	---	10.6	9.5	13.6
EAGLE CREEK	7000	3/24/88	43	11.7	9.2	14.9
EAST BOULDER S	9250	4/01/88	72	24.5	20.5	31.6
EAST FORK R.S.	5400	3/29/88	18	6.2	2.4	5.8
EL DORADO MINE	7800	3/29/88	52	15.6	14.0	22.3
ELK HORN SPRINGS	7800	3/28/88	27	7.0	6.0	9.6
ELK PEAK	8000	3/29/88	45	12.7	11.1	17.8
EMERY CREEK	4350	3/27/88	47	13.1	12.8	15.9
EMERY CREEK PILLOW	4350	4/01/88	---	13.0	13.7	16.7
FATTY CREEK	5500	3/31/88	61	20.9	18.5	24.8
FISH CREEK	8000	3/28/88	30	7.0	10.0	10.4
FISHER CREEK PILLOW	9100	4/01/88	---	27.1	23.4	37.0
FISHER CREEK	9100	3/30/88	84	28.0	23.8	39.6
FIVE-BULL	5700	4/08/88	6	2.2	4.1	6.6
FLATTOP MTN PILLOW	6300	4/01/88	---	35.2	38.1	46.8
FLEECER RIDGE	7500	3/31/88	30	8.8	7.0	11.7
FOOLHEN	8280	3/28/88	48	13.3	10.4	17.8
FOREST LAKE	6400	3/24/88	37	10.2	8.9	13.0
FOUR MILE	6900	3/23/88	30	7.2	6.7	9.2
FOURTH OF JULY	3450	3/30/88	18	5.6	4.3	7.3
FRED BURR PASS	8000	3/31/88	63	18.3	15.7	26.2
FREIGHT CREEK	6000	4/08/88	39	13.4	13.9	15.8
FRIDAY HILL	4620	3/30/88	40	11.6	15.0	20.4
FROHNER MEADOWS	6480	3/31/88	24	6.7	5.5	8.5
FROHNER MDWS PILLOW	6480	4/01/88	---	6.3	6.5	10.5
GARVER CREEK PILLOW	4250	3/27/88	---	8.3	7.5	10.0
GARVER CREEK	4250	3/27/88	28	7.8	8.7	10.5
GIBBONS PASS	7100	3/29/88	56	18.8	13.6	24.0
GOAT MOUNTAIN	7000	3/26/88	31	7.9	8.1	10.8
GOLD CREEK LAKE	7200	3/29/88	44	13.2	9.6	16.5
GOLD STONE	8100	3/28/88	44	12.4	11.0	18.0
GRASSHOPPER	7000	3/29/88	15	4.2	4.2	6.3
GRAVE CRK PILLOW	4300	4/01/88	---	12.7	13.5	17.1
GRAVE CREEK	4300	3/27/88	43	12.1	12.6	17.6
GRIFFIN CR DIVIDE	5150	3/29/88	28	8.4	8.5	11.7
GUNSIGHT LAKE	6300	4/08/88	96	38.0	30.6	40.2
HAND CREEK	5030	3/29/88	32	8.8	9.8	14.5
HAND CREEK PILLOW	5030	4/01/88	---	8.1	9.6	14.2
HAWKINS LAKE PILLOW	6450	4/01/88	---	22.7	21.6	28.1
HAWKINS LAKE	6450	3/27/88	78	25.9	26.9	30.8
HAYMAKER	8050	3/25/88	33	8.0	6.7	13.2
HEART LAKE TRAIL	4800	4/01/88	51	19.3	15.6	22.0
HEBGEN DAM	6550	3/30/88	29	6.8	7.9	12.5
HELL ROARING DIVIDE	5770	3/30/88	73	24.8	26.7	32.1
HERRIG JUNCTION	4850	3/29/88	68	20.8	21.5	28.1
HOLBROOK	4530	3/31/88	19	5.6	6.9	9.4
HOOD MEADOW	6600	3/30/88	45	11.9	6.4	11.5
HOODOO BASIN PILLOW	6050	4/01/88	---	37.6	34.0	48.9
HOODOO BASIN	6050	4/01/88	112	43.5	39.2	51.8
HOODOO CREEK	5900	4/01/88	102	37.8	34.2	47.8
INDEPENDENCE	7850	3/31/88	45	14.4	11.9	18.7
INTERGAARD	6450	3/29/88	24	7.0	5.3	9.0
JAHNKE LAKE TRAIL	7200	3/28/88	32	7.8	6.7	10.4
JOHNSON PARK	6450	3/28/88	19	5.2	3.3	7.2
KEELER CREEK	3300	3/25/88	29	9.8	8.6	10.8
KINGS HILL	7500	3/30/88	41	11.7	7.4	14.9
KISHENEHN	3890	3/31/88	18	4.6	4.4	7.3
KIWANIS CAMP	3720	3/28/88	5	.2	1.0	.9
KRAFT CREEK PILLOW	4750	4/01/88	---	11.5	7.1	11.2
LAKE CREEK	6100	3/29/88	20	4.5	5.1	9.0
LAKEVIEW CANYON	6930	3/30/88	23	5.3	7.9	13.1
LAKEVIEW RDG. PILLOW	7400	4/01/88	---	7.3	7.1	14.7
LAKEVIEW RIDGE	7400	3/30/88	22	5.8	7.0	11.7
LEMHI PASS	7480	3/28/88	30	7.2	8.5	9.4
LEMHI RIDGE	8100	3/28/88	40	10.1	11.0	10.8
LEMHI RIDGE PILLOW	8100	4/01/88	---	10.4	8.7	11.6
LICK CREEK PILLOW	6860	4/01/88	---	12.2	8.2	10.8

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
LICK CREEK	6860	3/30/88	54	13.3	8.1	10.8
LITTLE PARK	7400	3/28/88	47	13.2	10.2	16.9
LOGAN CREEK	4300	3/29/88	20	5.2	5.5	7.3
LONE MOUNTAIN	8880	4/04/88	55	21.8	15.8	23.8
LOST HORSE	5940	3/31/88	80	28.2	21.9	33.4
LOST SOUL	4800	3/27/88	37	10.2	11.7	15.7
LOWER TWIN PILLOW	7900	4/01/88	---	14.5	16.1	20.1
LOWER TWIN	7900	3/23/88	61	18.2	17.2	22.4
LUBRECHT FLUME	4680	4/01/88	2	.5	.4	4.6
LUBRECHT PILLOW	4680	3/01/88	---	1.8	3.2	5.1
LUBRECHT FOREST NO 3	5450	3/31/88	17	4.6	3.8	7.1
LUBRECHT FOREST NO 4	4650	3/31/88	3	.9	.4	2.3
LUBRECHT FOREST NO 6	4040	3/31/88	4	1.3	.7	2.5
LUBRECHT HYDROPLOT	4200	4/01/88	0	.0	2.4	4.5
MADISON PLT PILLOW	7750	4/04/88	---	20.8	15.6	25.3
MADISON PLATEAU	7750	4/04/88	65	21.6	14.9	24.1
MANY GLACIER	4900	3/30/88	46	14.0	15.3	20.9
MANY GLACIER PILLOW	4900	4/01/88	---	11.6	12.6	18.5
MARIAS PASS	5250	3/31/88	35	10.9	14.1	18.1
MAYNARD CREEK	6210	3/29/88	40	11.5	8.7	16.1
MAYNARD CR PILLOW	6210	3/29/88	---	9.8	6.1	12.2
MIDDLE MILL CREEK	7850	3/30/88	53	14.8	13.1	17.5
MILL CREEK	7500	3/26/88	39	11.2	9.3	13.8
MINERAL CREEK	4000	4/01/88	40	13.6	12.6	18.0
MONUMENT PK PILLOW	8850	4/01/88	---	14.9	14.4	21.8
MONUMENT PEAK	8850	3/31/88	59	19.8	17.9	27.2
MOSS PEAK	6780	3/31/88	87	31.0	35.0	--
MOSS PEAK PILLOW	6780	4/01/88	---	27.4	31.3	42.8
MOULTON RESERVOIR	6850	4/01/88	24	6.0	4.5	7.0
MT LOCKHART PILLOW	6400	4/01/88	---	19.2	18.1	21.8
MOUNT LOCKHART	6400	3/27/88	64	21.0	18.4	23.4
MUDD LAKE	7650	3/25/88	50	15.9	11.4	21.1
MULE CREEK	8300	3/24/88	47	13.3	12.0	16.2
MULE CREEK PILLOW	8300	4/01/88	---	14.2	12.4	14.2
NEVADA CREEK	6480	4/08/88	36	12.3	9.8	15.2
NEVADA CREEK PILLOW	6480	4/01/88	---	11.9	9.9	14.2
NEW WORLD	6900	3/31/88	55	17.0	12.3	16.1
NEWTON MOUNTAIN	5600	3/30/88	78	24.8	28.3	36.1
NEZ PERCE CMP PILLOW	5650	4/01/88	---	14.7	9.2	15.6
NEZ PERCE CAMP	5650	3/26/88	40	14.8	9.3	15.5
NEZ PERCE CREEK	6600	3/28/88	21	5.8	5.0	7.3
NEZ PERCE PASS	6570	3/26/88	43	15.6	10.6	17.8
NOISY BASIN	6040	3/27/88	89	31.6	35.0	46.7
NOISY BASIN PILLOW	6040	4/01/88	---	29.4	30.1	41.6
N.F. ELK CR PILLOW	6250	4/01/88	---	10.0	8.3	14.1
N.F. ELK CREEK	6250	3/31/88	31	9.5	8.6	12.9
NORTH FORK JOCKO	6330	3/31/88	103	37.4	30.1	46.2
NORTH MEADOW	7500	3/23/88	31	6.7	8.4	9.3
N.E. ENTRANCE PILLOW	7350	4/01/88	---	6.8	5.8	9.5
NORTHEAST ENTRANCE	7350	4/01/88	21	5.4	5.4	9.5
NOTCH	8500	3/29/88	38	9.6	13.0	17.3
OPHIR PARK	7150	3/27/88	44	14.8	13.4	18.5
PALISADE CREEK	8250	3/25/88	68	23.9	20.6	30.5
PETERSON MDW PILLOW	7200	3/29/88	---	8.4	8.2	11.2
PETERSON MEADOWS	7200	3/29/88	33	8.1	7.6	11.1
PICKET PIN D	9450	4/01/88	60	20.5	22.5	26.3
PICKET PIN LOWER	6200	3/29/88	15	3.4	5.6	2.8
PICKET PIN MIDDLE	7250	3/29/88	32	10.0	12.6	13.8
PICKET PIN UPPER	8100	3/29/88	55	16.7	20.0	21.0
PICKFOOT CREEK	6650	3/28/88	31	8.3	6.0	11.1
PICKFOOT CRK PILLOW	6650	4/01/88	---	9.2	6.6	12.0
PIKE CREEK	5930	3/31/88	60	19.0	23.2	25.1
PIKE CREEK PILLOW	5930	4/01/88	---	22.0	25.7	29.0
PIPESTONE PASS	7200	3/28/88	17	4.4	5.8	6.1
PLACER BASIN F	8830	4/01/88	54	18.5	18.0	22.1
PLACER BASIN PILLOW	8830	4/01/88	---	16.3	16.9	16.5
POORMAN CREEK	5100	3/25/88	70	23.1	23.2	36.0
PORCUPINE PILLOW	6500	4/01/88	---	6.2	3.2	8.2
PORCUPINE	6500	3/31/88	20	6.2	3.0	8.4
POTOMAGETON PARK	7150	3/29/88	36	7.6	9.2	15.1
RED MOUNTAIN	6000	4/01/88	49	12.4	14.8	19.3
RED TOP	5260	3/30/88	64	20.1	22.5	29.9
ROCK CREEK	5600	3/31/88	39	12.8	7.0	10.7
ROCK CREEK MEADOW	8160	3/26/88	50	14.9	15.4	23.7
ROCKER PEAK	8000	4/01/88	43	13.3	9.8	15.9
ROCKER PEAK PILLOW	8000	4/01/88	---	11.9	10.7	15.7
ROCKY BOY	4700	3/28/88	16	3.2	1.0	4.8
ROCKY BOY PILLOW	4700	3/28/88	---	4.8	2.3	5.9
SACAJAWEA	6550	3/29/88	38	10.6	8.8	15.4
SADDLE MTN PILLOW	7900	4/01/88	---	21.0	15.6	27.3
SADDLE MOUNTAIN	7940	3/29/88	64	21.1	15.9	26.2
SENTINEL CREEK	8300	3/29/88	55	17.6	13.6	24.7
SHORT CREEK	7000	3/31/88	16	4.2	3.4	--

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
SHOWER FALLS	8100	3/30/88	71	20.4	15.4	24.6
SHOWER FALLS PILLOW	8100	4/01/88	---	20.8	17.0	25.0
SILVER RUN	6630	3/28/88	16	4.6	3.8	6.1
SILVER RUN PILLOW	6630	4/01/88	---	6.0	5.4	7.3
SKALKAHO PILLOW	7260	4/01/88	---	20.6	15.7	25.8
SKALKAHO SUMMIT	7250	3/28/88	63	21.5	17.0	26.7
SKYLARK TRAIL PILLOW	6200	4/01/88	---	35.0	23.3	34.5
SLAG-A-MELT LAKE	8750	3/28/88	57	18.6	13.0	27.0
SLIDE ROCK MOUNTAIN	7100	3/30/88	46	13.5	11.2	17.3
SMUGGLER MINE	6960	3/30/88	36	8.6	8.6	10.8
S.F. SHIELDS PILLOW	8100	4/01/88	---	14.5	11.0	18.5
S.F. SHIELDS	8100	3/31/88	64	21.2	15.6	25.9
SPOTTED BEAR MTN.	7000	4/08/88	31	12.0	8.9	15.4
SPUR PARK PILLOW	8100	4/01/88	---	17.7	12.5	22.8
SPUR PARK	8100	3/30/88	54	16.7	9.8	22.2
STAHL PEAK	6030	3/27/88	86	30.9	35.8	40.4
STAHL PEAK PILLOW	6030	4/01/88	---	27.1	35.4	38.2
STAR LAKE E	9650	4/01/88	90	30.5	25.0	44.2
STEMPLE PASS	6600	3/31/88	31	7.8	6.4	10.9
STORM LAKE	7780	3/29/88	43	11.0	9.3	14.4
STRYKER BASIN	6180	3/29/88	78	23.4	33.3	35.4
STUART MILL	6500	3/29/88	22	6.6	5.0	7.1
STUART MOUNTAIN	7400	3/31/88	70	26.0	25.0	33.8
SUCKER CREEK	3960	3/28/88	0	.0	1.0	.3
TAYLOR ROAD	4080	3/28/88	6	.2	1.0	2.6
TEN MILE LOWER	6600	3/30/88	28	6.5	5.3	8.0
TEN MILE MIDDLE	6800	3/30/88	38	10.0	8.2	12.5
TEN MILE UPPER	8000	3/29/88	39	11.2	8.8	14.6
TEPEE CREEK PILLOW	8000	4/01/88	---	9.9	9.2	14.7
TEPEE CREEK	8000	3/29/88	41	9.4	12.0	16.3
TIMBERLINE CREEK	8850	3/30/88	47	12.2	10.4	15.2
TRAIL CREEK	7090	3/28/88	30	7.5	6.7	9.0
TRINKUS LAKE	6100	4/08/88	86	36.0	34.2	44.7
TRUMAN CREEK	4060	3/28/88	4	1.2	1.8	3.4
TV MOUNTAIN	6800	3/31/88	49	16.2	9.8	19.9
TWELVEMILE PILLOW	5600	4/01/88	---	15.9	12.4	19.5
TWELVEMILE CREEK	5600	3/31/88	56	21.3	14.7	22.3
TWENTY-ONE MILE	7150	3/31/88	40	11.7	8.2	18.2
TWIN CREEKS	3580	4/08/88	21	8.7	7.4	10.7
TWIN LAKES PILLOW	6400	4/01/88	---	36.0	29.5	42.5
TWIN LAKES	6510	3/31/88	100	36.7	30.4	42.8
UPPER HOLLAND LAKE	6200	4/08/88	82	32.6	24.9	36.1
WALDRON PILLOW	5600	4/01/88	---	10.9	9.3	10.1
WALDRON	5600	3/27/88	27	6.4	8.0	10.5
WARM SPRINGS	7800	3/31/88	52	14.9	10.7	20.7
WARM SPRINGS PILLOW	7800	4/01/88	---	16.7	15.0	27.9
WEASEL DIVIDE	5450	3/27/88	77	24.9	29.0	34.7
WEST YELL'ST PILLOW	6700	3/31/88	---	5.9	5.8	9.7
WEST YELLOWSTONE	6700	3/31/88	27	7.3	5.9	12.1
WHISKEY CREEK PILLOW	6800	4/01/88	---	12.8	11.5	18.1
WHISKEY CREEK	6800	4/04/88	53	17.0	13.1	21.8
WHITE MILL PILLOW	8700	4/01/88	---	16.9	16.2	26.6
WHITE MILL	8700	3/30/88	64	20.8	17.0	28.6
WHITE PINE RIDGE	8850	3/28/88	19	3.9	6.8	5.8
WILLOW CREEK	6500	3/28/88	25	6.9	8.8	9.8
WOOD CREEK	5960	4/08/88	22	8.1	10.4	11.6
WOOD CREEK PILLOW	5960	4/01/88	---	7.5	8.7	12.2
WRONG CREEK	5700	3/24/88	36	9.4	10.2	14.2
WRONG RIDGE	6800	3/24/88	47	13.4	14.2	19.8

Valley Precipitation



Over 130%

110 - 130%

90 - 110%

70 - 90%

Under 70%

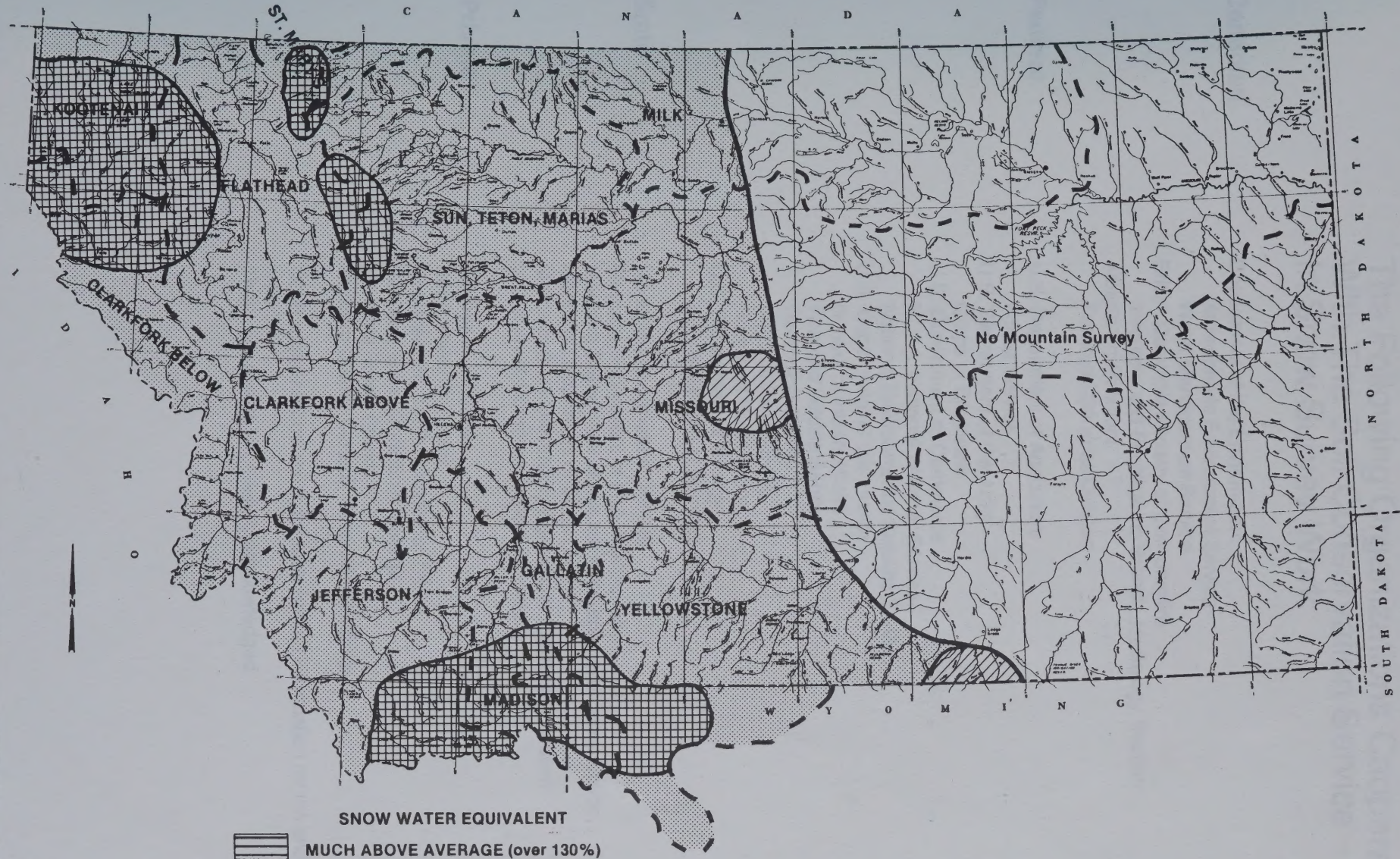
MARCH 1988

Source: NWS
Great Falls, MT

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA



SNOW WATER EQUIVALENT

- MUCH ABOVE AVERAGE (over 130%)
- ABOVE AVERAGE (110-130%)
- NEAR AVERAGE (90-110%)
- BELOW AVERAGE (70-90%)
- MUCH BELOW AVERAGE (below 70%)
- NO MOUNTAIN SURVEY

%1961-85 AVERAGE

APRIL 1,1988

0 25 50 75 100 MI

0 50 100 150 KM

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296-1

The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canadian

Department of the Environment
- Atmospheric Environment Service
- Water Management Service

British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section

Alberta Environment
- Technical Services Division

Federal

U.S. Department of Agriculture
- Forest Service

U.S. Department of the Army
- Corps of Engineers

U.S. Department of Commerce
- NOAA, National Weather Service
- National Environmental Satellite Service

U.S. Department of the Interior
- Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation

U.S. Department of Energy
- Bonneville Power Administration

State

Montana Conservation Districts
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of State Lands
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

Private

Big Sky of Montana
Butte Water Company
Confererated Salish & Kootenai Tribes
Flathead Valley Comminity College
Montana Power Company
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports.
Their cooperation is gratefully acknowledged.

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SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
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